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New species and records of coral reef inhabiting Caprellidae from Bora Bora and Moorea, Society Islands (Crustacea: Amphipoda)

by

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With 64 figures

ABSTRACT

New species and records are presented for the amphipod family Caprellidae from coral reefs at Bora Bora and Moorea, Society Islands. *Caprellina bispinosa* n. sp. and *Fallotritella polynesica* n. sp. are described. Notes on the habitat preference of the other species, *Hemiaegina minuta* Mayer, 1890 and *Metaprotella sandalensis* Mayer, 1898 are also given. *M. sandalensis* is redescribed with particular reference to its intraspecific variability.

The following account forms a part of a series surveying the coral-reef inhabiting invertebrates of tropical Pacific islands. It deals with the amphipod family Caprellidae, based on specimens collected by the author in February-March 1988 at Bora Bora and Moorea, Society Islands. Few published records are available regarding the Caprellidae from the tropical Pacific. From the Society Islands only one species, *Hemiaegina minuta* Mayer, 1890 from Bora Bora came to my knowledge (McCAIN & STEINBERG 1970: 51), a species also dealt with in that report. Altogether four species from exposed reef locations could be found, two being new to science. A redescription of the widely distributed but poorly known and variable species *Metaprotella sandalensis* Mayer, 1898 will be also given.

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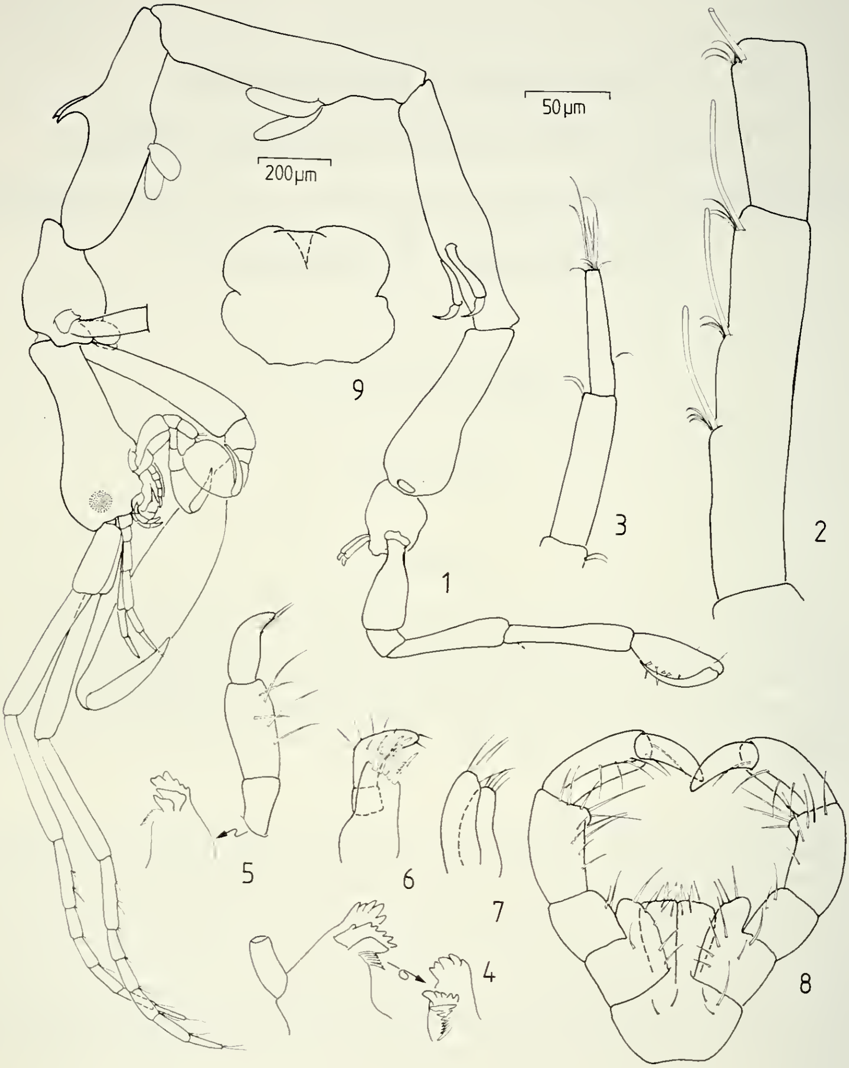


FIGS 1-9.

Caprellina bispinosa n. sp., ♂ holotype: 1) lateral view; 2) proximal articles of antenna 1 flagellum; 3) antenna 2 flagellum; 4) left mandible, two distal palp articles omitted; 5) right mandible; 6) maxilla 1; 7) maxilla 2; 8) maxilliped; 9) labrum.

Detailed information on the collecting localities is given in GALZIN & POINTIER (1985) and PIRAZZOLI *et al.* (1985).

Specimens are deposited in the Senckenberg-Museum, Frankfurt a.M. (SMF), the Muséum national d'Histoire naturelle, Paris (MNHN) and the Muséum d'Histoire naturelle, Genève (MHNG).

The research has been mainly carried out at the marine biological station Antenne Muséum at Moorea (director: Dr. René Galzin) and the Laboratoire de Biologie marine et Malacologie, Université de Perpignan, France (director: Dr. Bernard Salvat). My sincere thanks are due to these colleagues for their various help in organizing the field work and making it possible to use the facilities of that institutes.

Caprellina Thomson, 1879

Caprellina bispinosa n. sp. (Figs 1-20)

Holotype: ♂ (SMF 18311), Moorea; crest of barrier reef near Maharepa, about 2.6 km west of airport, dead corals, 0.5 m, March 1988.

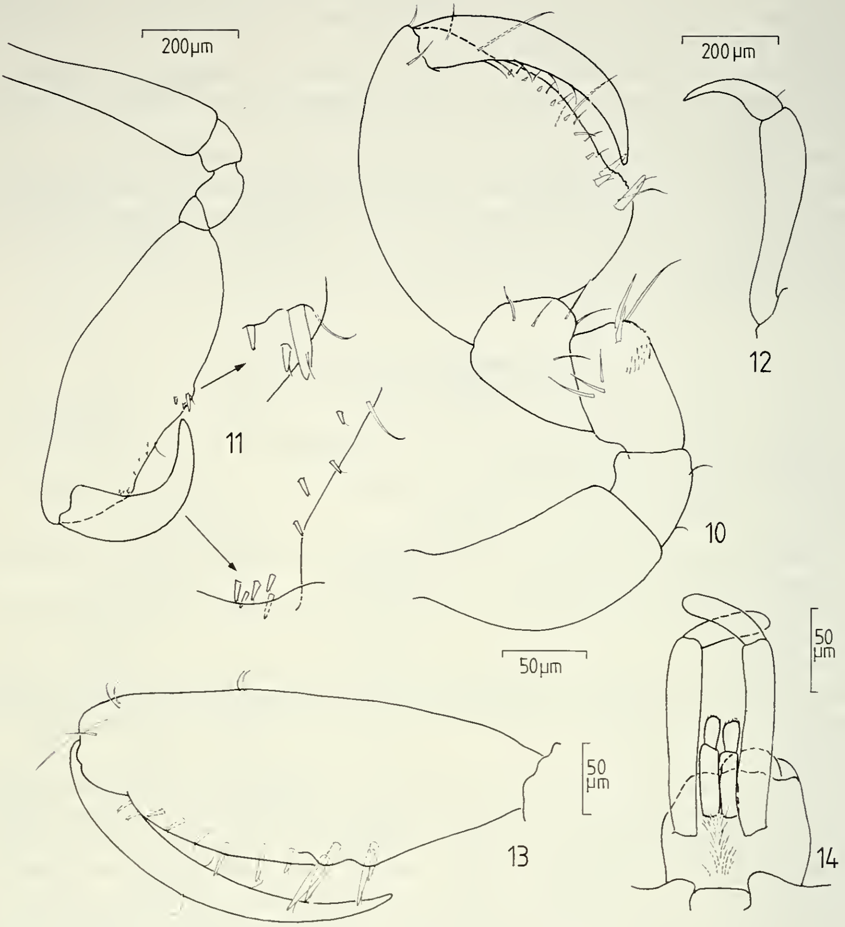
Paratypes: 2♂♂, 5♀♀, 1 juv., deposited as follows. — 3♀♀, 1 juv. SMF 18312; 1♂, 1♀ MHNG; 1♂, 1♀ MNHN; together with holotype.

Diagnosis: *Caprellina* with dorsal pair of anteriorly directed, curved and acute projections shorter than pereonite diameter, on pereonite 3.

Derivatio nominis: The specific name refers to the pair of acute projections on pereonite 3.

Description, ♂ holotype: Total length (front of cephalon to posterior margin of abdomen) 3.7 mm. Body smooth except for pair of curved, acute and anteriorly directed projections on dorsal surface of pereonite 3; pereonite 1 fused with cephalon, no suture line visible.

Antenna 1, about 4 times longer than antenna 2; peduncle of 3 segments, proximal one shortest and widest; flagellum with three proximal articles fused; flagellum with row of about 9 aesthetascs accompanied by some short, simple setae. Second antenna 6-segmented, fourth segment longest, each bearing some short simple setae. Mandible with 3-segmented palp; second segment with 5, third with 2 simple setae; incisor with 5-6 cusps, lacinia mobilis of left mandible with 6 cusps; incisor of right mandible with two accessory plates and one accessory plate in left mandible; spine row of about 7 short spines, molar absent. 2-segmented palp of maxilla 1 with about 8 simple setae on distal segment, lobe with 6 distal, serrate spines. Inner and outer lobe of second maxilla with 4 distal simple setae. Endite of maxilliped blunt, with 2 distal spines and 3 simple setae; palp 5-segmented, inner lobe of proximal segment roughly oval, with some simple setae; this lobe shorter than endite; all palp segments except for distal one with some simple setae along medial and distal margins. Labrum with anterodistal rounded lobes. Gills of pereonites 2-4 elongate-oval. Propodus of gnathopod 1 flattened, 1.2 times longer than wide, palm with row of 9 spines of different size and some short simple setae; dactylus more strongly curved in distal third, not extending beyond proximal compound spine of propodal palm. Propodus of gnathopod 2 roughly elongate-oval; palm with about 12 compound spines of different size in distal half; grasping margins of propodus and dactylus smooth, dactylus robust, strongly curved, its tip not extending beyond proximal compound spines of propodal palm. Fifth pereopod reduced, 2-segmented, terminal segment in form of dactylus. Pereopods 6 and 7 normally developed, carpus and merus being the longest segments; propodus roughly elongate-oval, palm convex, with row of



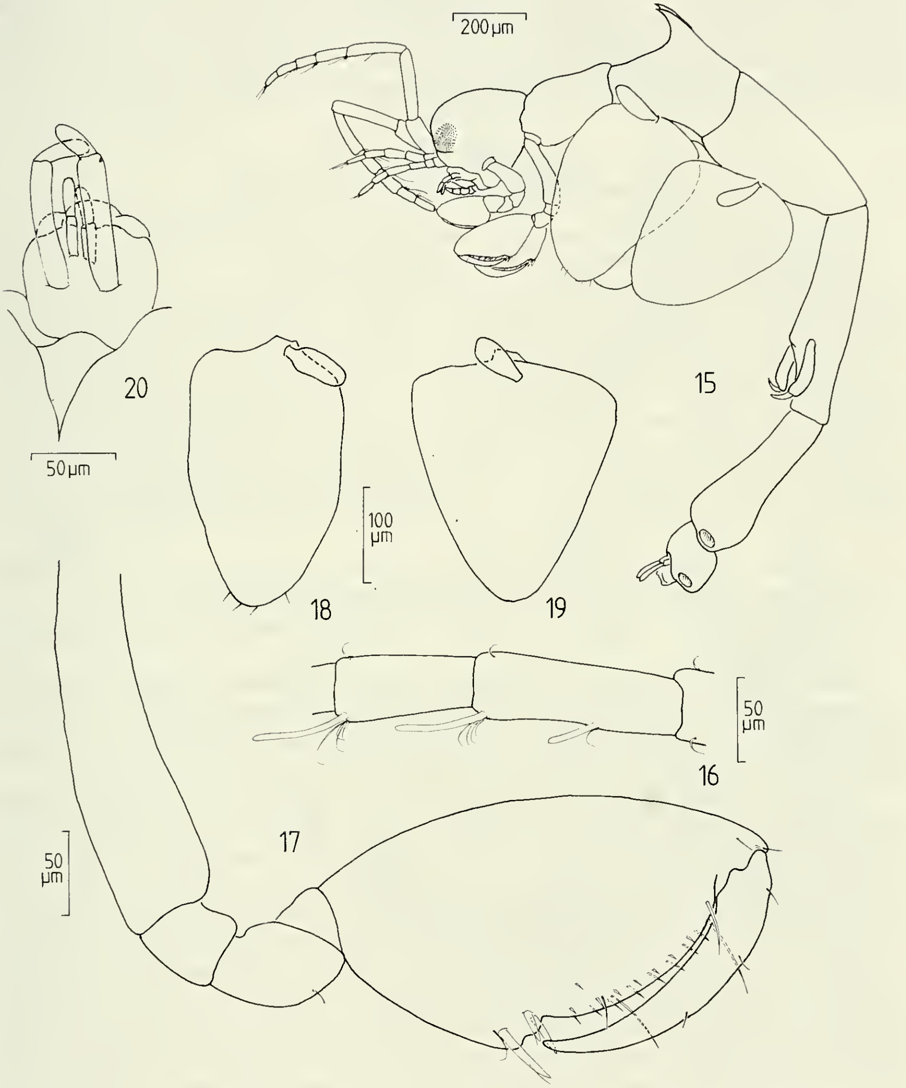
FIGS 10-14.

Caprellina bispinosa n. sp., ♂ holotype: 10) gnathopod 1; 11) gnathopod 2; 12) pereopod 4; 13) dactylus and propodus of pereopod 7; 14) abdomen, ventral view.

about 11 compound spines; dactylus just extending beyond proximal compound spine of propodal palm.

Abdomen with two pairs of 2-segmented appendages; distal segment of proximal lobes about 0.4 times length of proximal segment; segments of distal lobes subequal in length.

♀: Similar in habitus to ♂ with head and pereonites 3-4 more robust. Only two proximal articles of antenna 1 flagellum fused, flagellum with row of about 5 aesthetascs accompanied by one or some short simple setae. Propodus of second gnathopod roughly elongate-oval; palm of propodus convex with distinct rounded heel in proximal half, bearing 3 robust compound spines; palm distally of these spines with about 7 very short spines and several simple setae. Oostegites of pereonites 3 and 4 roughly triangular.



FIGS 15-20.

Caprellina bispinosa n. sp., ♀ paratype: 15) lateral view; 16) proximal articles of antenna 1 flagellum; 17) gnathopod 2; 18) oostegite 1; 19) oostegite 2: 20) abdomen, ventral view.

Abdominal appendages similar to ♂.

Distribution: Moorea, Society Islands.

Remarks: Of the 2 species of *Caprellina* (McCAIN & STEINBERG 1970: 46) the small new species seems to be more closely related to *Caprellina spiniger* Barnard, 1916 from South Africa. It is easily distinguishable from that species through the presence of only one pair of dorsal projections on pereonite 3, unlike *C. spiniger*, which bears a pair of these projections on pereonites 2 and 3 (see GRIFFITHS 1976: 89, Fig. 60 A).

Fallotritella McCain, 1968
Fallotritella polynesica n. sp. (Figs 21-40)

Holotype: ♂ (SMF 18305), Bora Bora; fringing reef near Vaitape, dead corals covered with sponges and algae, 0.5-1 m, near slope, 27 February-6 March 1988.

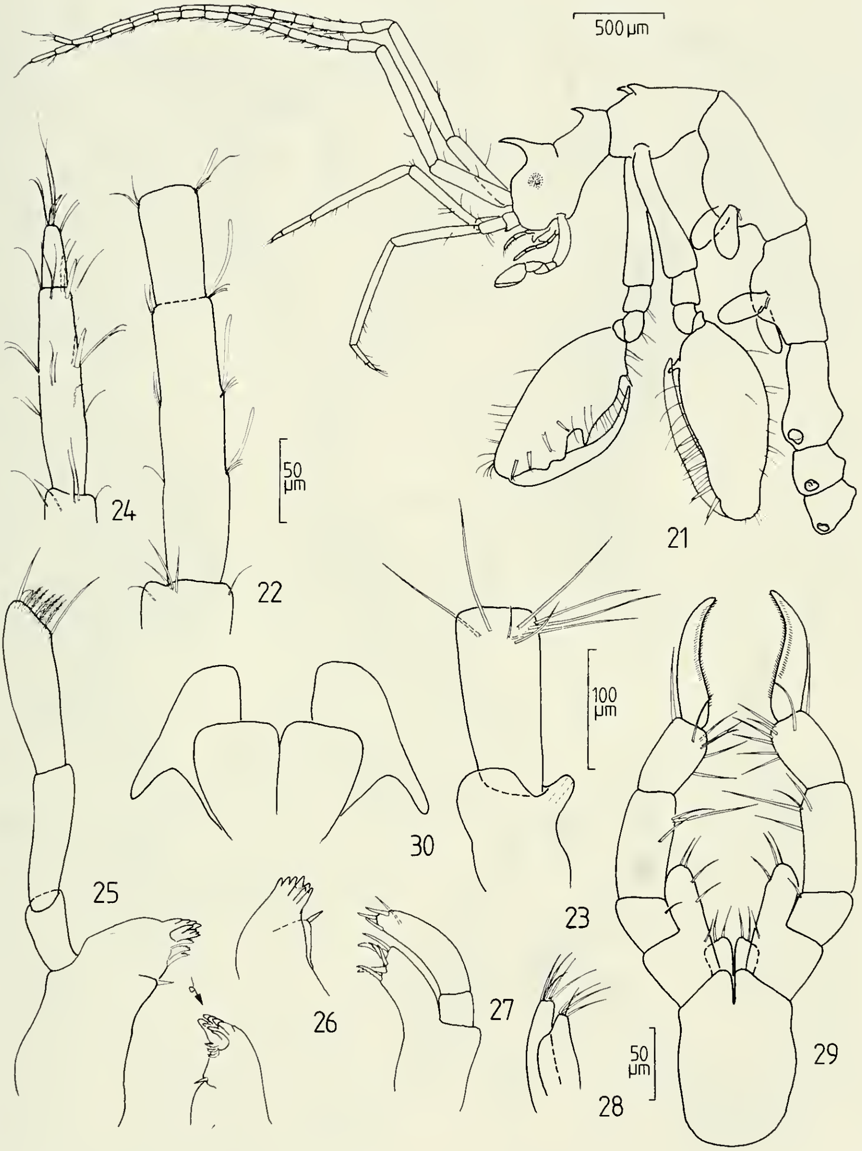
Paratypes: 4♂♂, 12♀♀ (SMF 18306), together with holotype. 1♀, 1 juv. (MHNG), Bora Bora; barrier reef near Motu tapu, dead corals, 1-1.5 m, 7 March 1988. 2♂♂, 2♀♀, 3 juv. (MHNG), Moorea; coral slope of fringing reef near Afareaitu, dead corals, 1-2 m, 26 March 1988. 1♂, 1♀ (MHNG), Moorea; Temae, the Islet Reef, north of airport; crest of barrier reef, on *Sargsassum*, about 0.5 m, 19-20 February 1988. 2♂♂ (MNHN), Moorea; Temae, the Islet Reef, north-east of airport, channel near beach, dead corals, about 2 m, 31 March 1988. 3♂♂, 4♀♀, 1 juv. (MNHN), Moorea; crest of barrier reef near Maharepa, about 2.6 km west of airport, dead corals, about 0.5 m, March 1988. 1♂ (MNHN), Moorea; crest of barrier reef near Maharepa, on *Sargassum*, 0-05 m, 15 March 1988. 4♂♂, 1♀ (MNHN), Moorea; crest of Tiahura barrier reef, dead corals, 0.5-1 m, 25 March 1988.

Diagnosis: *Fallotritella* with acute, anterodorsal projection on cephalon and pereonite one and dorsal pair of these projections on second pereonite.

Derivatio nominis: The specific name is an adjective qualifying the geographic area of the type locality.

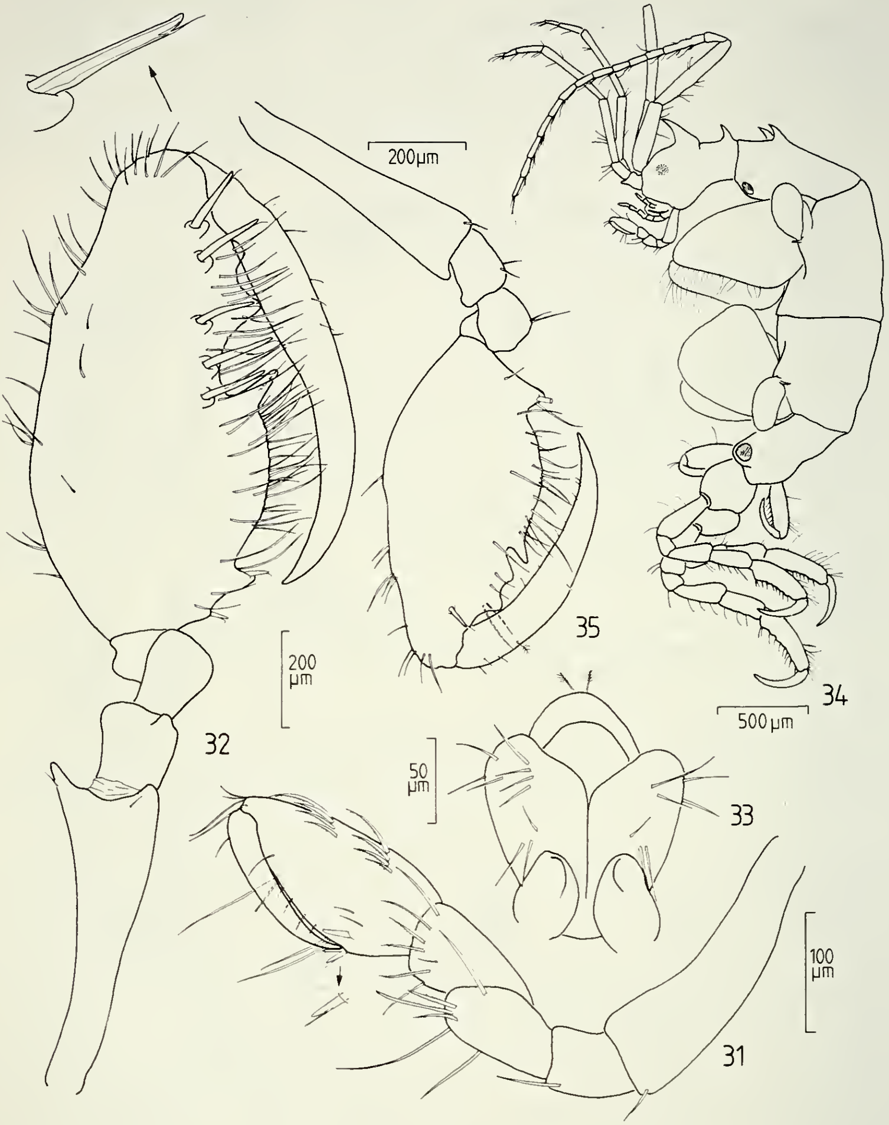
Description, ♂ holotype: Total length (front of cephalon to posterior margin of abdomen) 3.6 mm. Body smooth except for single acute, anteriorly directed projection on cephalon (longest) and pereonite 1; one pair of these dorsal projections on pereonite 2; pereonite 1 incompletely fused with cephalon, distinct suture line visible dorsally.

Antenna 1, about 2 times longer than antenna 2; 2-segmented peduncle with proximal segment of 3/4 length of distal one; flagellum with at least three proximal articles fused, free flagellar articles numbering about 12; flagellum with aesthetasc on each article, accompanied by some short, simple setae. Second antenna 6-segmented with segments 3-4 longest, fourth somewhat longer than third; penultimate segment with 2 compound spines in distal half, beside several short simple setae; terminal segment with some short simple setae, of 1/4 length of penultimate segment. Mandibles with 3-segmented palp, segments increasing in length distally; terminal segment with 2 simple setae, beside short serrate spine and 5 short feathered setae; incisor of mandibles with about 5 cusps, incisor of left mandible with 4 cusps; three accessory plates on both left and right mandible; molar reduced, being a small cone with single distal spine. 2-segmented palp of maxilla 1 with three short apical spines and a simple seta; lobe with 5 short serrate spines. Maxilla 2, outer lobe with 5, inner lobe with 4 distal setae. Short endite of maxilliped with 2 distal setae; inner lobe of 5-segmented palp distally rounded, extending beyond distal margin of second segment, bearing 3-4 setae along medial and distal margin; grasping margins of curved distal segment with two rows of stiff setules. Labium having the lateral lobes with narrow, posteriorly directed process. Propodus of gnathopod 1 roughly elongate-oval, palm bearing 3 proximal compound spines; dactylus well curved, not extending beyond



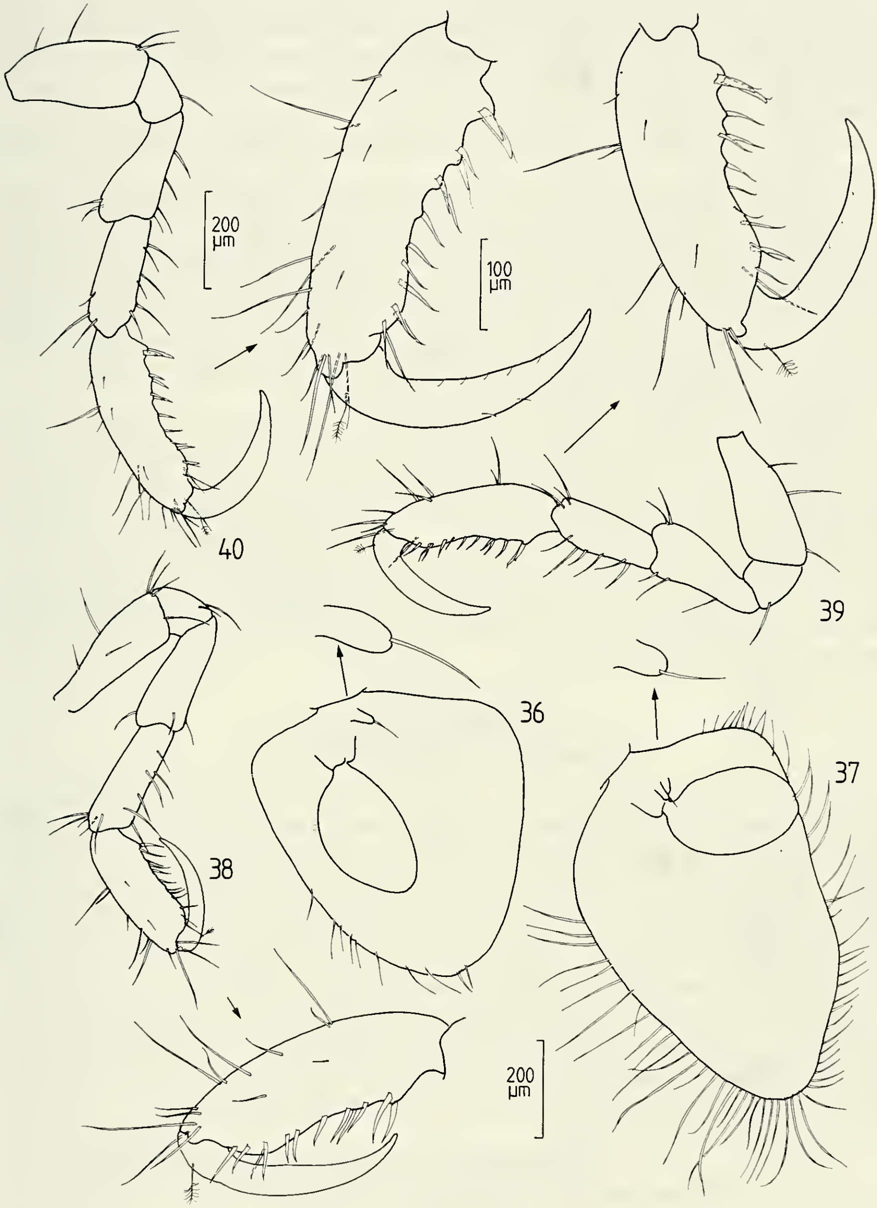
FIGS 21-30.

Fallotritella polynesica n. sp., ♂ holotype: 21) lateral view; 22) proximal articles of antenna 1 flagellum; 23) proximal articles of antenna 2 peduncle; 24) flagellum of antenna 2; 25) left mandible; 26) right mandible, palp omitted; 27) maxilla 1; 28) maxilla 2; 29) maxilliped; 30) labium.



FIGS 31-35.

Fallotritella polynesica n. sp., ♂ holotype: 31) gnathopod 1; 32) gnathopod 2; 33) abdomen, ventral view. ♀ paratype: 34) lateral view; 35) gnathopod 2.



FIGS 36-40.

Fallotritella polynesica n. sp., ♀ paratype: 36) oostegite 1; 37) oostegite 2; 38) pereopod 5; 39) pereopod 6; 40) pereopod 7.

compound spines of propodal palm; propodus, carpus and merus bearing some feathered setae. Propodus of gnathopod 2 greatly enlarged; palm with proximal compound spine on triangular heel; in distal half with a deep and a shallow excavation; beside these excavations, propodus bearing row of 5 very strong compound spines on shallow tubercles. Gills on pereonites 3 and 4 oval. Pereopods 3 and 4 unisegmented with single seta at tip. Pereopods 5-7, see description of ♀.

Abdomen with pair of setose, distally rounded lobe; penes robust, less than two times as long as wide.

♀: General habitus similar to ♂ with second gnathopod much smaller and pereonites 3-4 more robust. Propodus of second gnathopod in shape similar to ♂, much smaller and less setose, lacking the distal row of elongate compound spines. Oostegites roughly triangular, distal margin of first oostegite with about 10, margin of second oostegite with about 62 setae. Pereopod 5 inserted posteriorly on pereonite, smaller than pereopods 6-7; palm of faintly curved propodus in pereopods 5-7 with several spines as figured; additionally, pereopods 6-7 with some proximal compound spines beside simple spines.

Distribution: Bora Bora and Moorea, Society Islands.

Remarks: Two species of *Fallotritella* are known up to now, *F. biscayensis* McCain, 1968 from Florida and *F. montoucheti* de Araújo Quitete, 1971 from Brasil. *F. polynesica* seems to be more closely allied with the former, easily distinguishable by the number and arrangement of dorsal projections on cephalon and pereonites 1-2 (see McCain 1968: 58). In disagreement with the generic diagnosis, *F. polynesica* has the molar of the mandibles not totally reduced. It is present as a shallow cone with a distal spine. *F. polynesica* is the more common species of those being new to science and appears to be widely distributed in shallow reef habitats in the area investigated. It was found in almost all samples taken from more or less exposed locations.

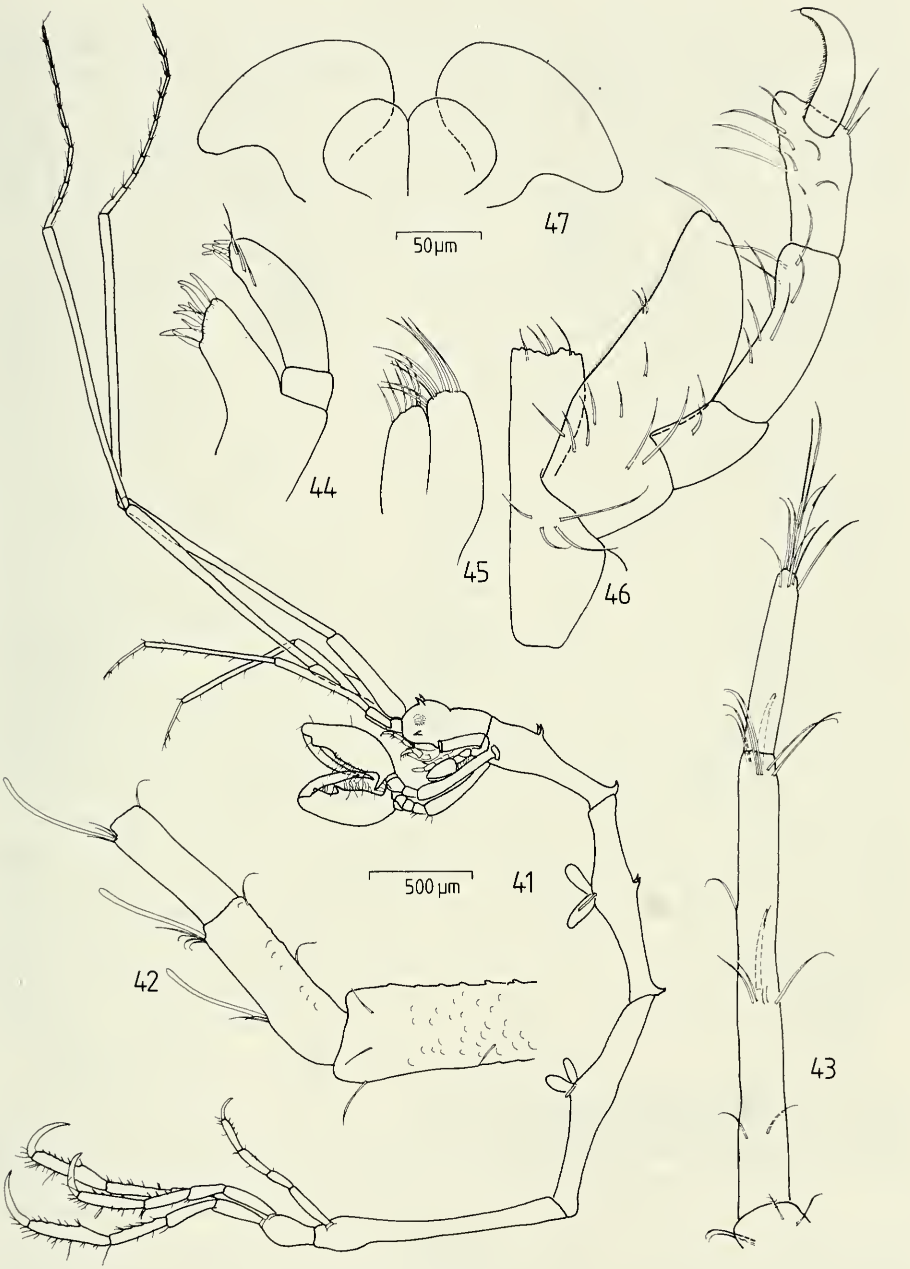
Hemiaegina Mayer, 1890
Hemiaegina minuta Mayer, 1890

Material: 1♂ (SMF 18307), Bora Bora; fringing reef near Vaitape, dead corals covered with sponges and algae, 0.5-1 m, near slope, 27 February-6 March 1988. 1♂ (MHNG), Moorea; coral slope of fringing reef near Afareaitu, dead corals, 1-2 m, 26 March 1988. 5♂♂, 1♀, 2 juv. (MHNG), Moorea; Temae, the Islet Reef, north of airport, crest of barrier reef, on *Sargassum*, about 0.5 m, 19-20 February 1988. 6♂♂, 6♀♀, 2 juv. (SMF 18309), Moorea; crest of barrier reef near Maharepa, about 2.6 km west of airport, dead corals, about 0.5 m, March 1988. 1♂ (SMF 18310), Moorea; barrier reef east of Maharepa, channel near beach, dead corals, 0.5-1 m, March 1988. 1♂, 2♀♀, 2 juv. (SMF 18308), Moorea; crest of Tiahura barrier reef, dead corals, 0.5-1 m, 25 March 1988.

Remarks: *H. minuta* is widely distributed in tropical and temperate waters of the world oceans. At the Society Islands it was already known from Bora Bora (McCain 1968: 62, McCain & Steinberg 1970: 51). As all the other species dealt with in that report, *H. minuta* was found only in more or less exposed reef locations.

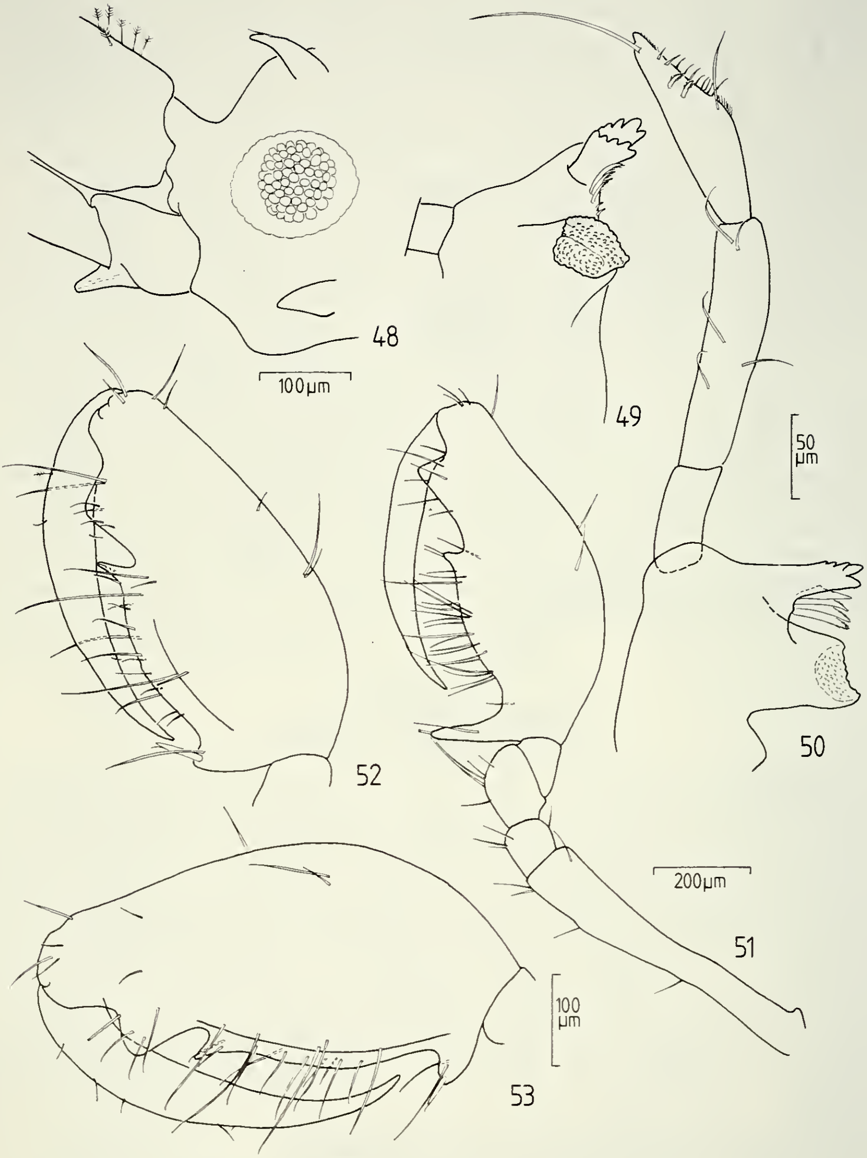
Metaprotella Mayer, 1898
Metaprotella sandalensis Mayer, 1898 (Figs 41-64)

Material: 12♂♂, 9♀♀, 13 juv., deposited as follows. — 8♂♂, 5♀♀, 13 juv. SMF 18303; 2♂♂, 2♀♀ MHNG; 2♂♂, 2♀♀ MNHN: Bora Bora; fringing reef near Vaitape, dead corals covered with sponges and algae, 0.5-1 m, near slope, 27 February-6 March 1988. 2♀♀, 2 juv. (SMF 18302), Bora Bora; barrier reef near Motu tapu, dead corals, 1-1.5 m,) March 1988. 1♂, 1 juv. (SMF 18304), Moorea; coral slope of Tiahura fringing reef, dead corals, about 2 m, 22-23 March 1988.



FIGS 41-47.

Metaprotella sandalensis Mayer, 1898, ♂: 41) lateral view; 42) distal part of terminal antenna 1 peduncle segment and proximal articles of flagellum; 43) antenna 2 flagellum; 44) maxilla 1; 45) maxilla 2; 46) maxilliped; 47) labium.



FIGS 48-53.

Metaprotella sandalensis Mayer, 1898, ♂: 48) lateral view of cephalon with insertion of antennae; 49) left mandible, palp omitted; 50) right mandible; 51) gnathopod 2; 52) dactylus and propodus of gnathopod 2, other ♂; 53) dactylus and propodus of gnathopod 2, other ♂.

Diagnosis: *Metaprotella* with pair of small dorsal, acute projections on cephalon, pereonites 2 and 4 and a single acute projection on the posterior margin of pereonite 2. Another acute, anteriorly directed process is often visible below the eyes.

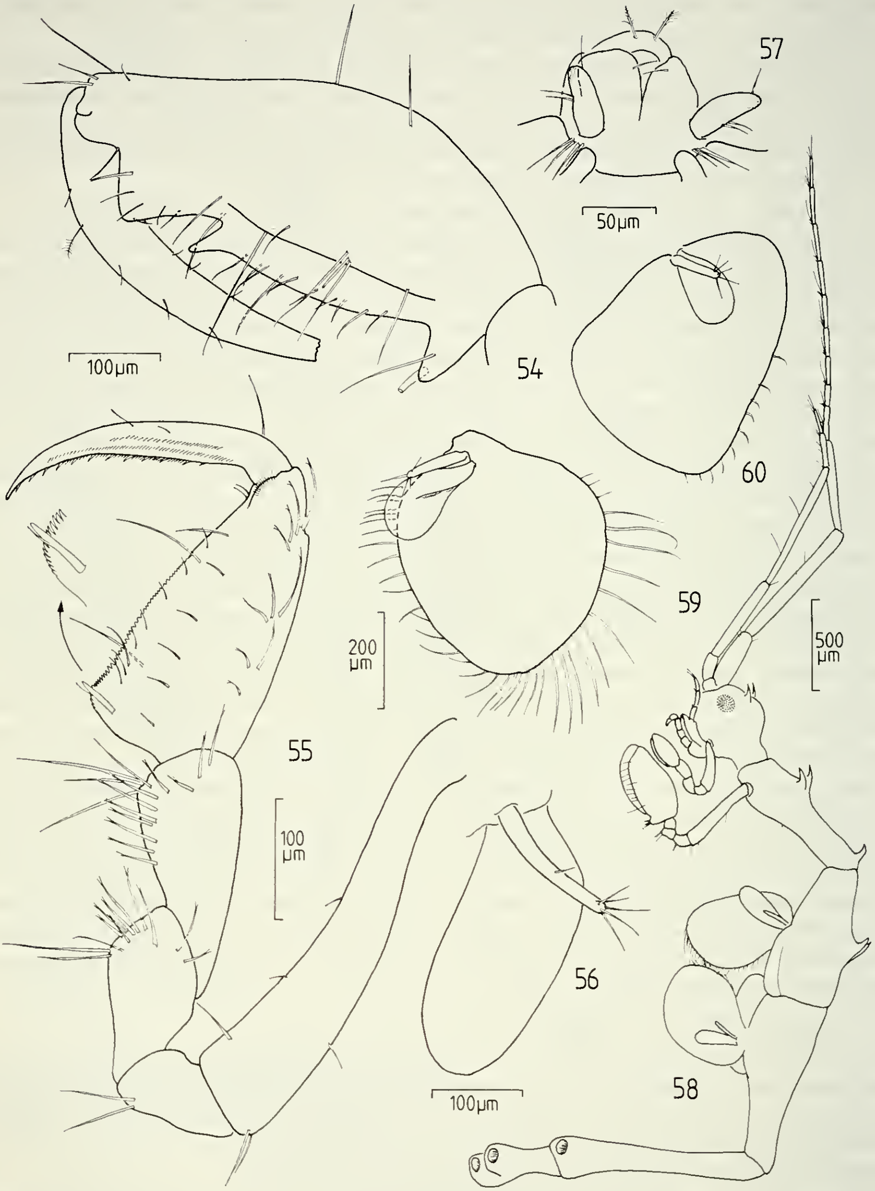
Description, ♂: Total length (front of cephalon to posterior margin of abdomen) about 6.5 mm. Body smooth except for pair of dorsal, acute projections on cephalon, pereonite 2 and 4 and single acute projection on posterior margin of second pereonite; often such a projection can also be found below the eyes. Pereonite 1 incompletely fused with cephalon, suture line faintly visible dorsally.

Antenna 1, about 2.6 times longer than antenna 2; peduncle of 3 segments, proximal one shortest and widest; narrow third peduncle segment about 1.2 times longer than second; flagellum with 2 proximal articles fused and 9 free distal articles, each bearing aesthetasc and some short, simple setae. Second antenna with biarticulate flagellum, proximal article bearing 2 compound spines, distal one with single compound spine near apex; proximal article 2.5 times longer than distal article. Mandible with 3-segmented palp, second segment with about 5 simple setae; terminal segment with two longer simple setae, about 10 short simple setae, two short feathered spines and several setules; incisor with 5 cusps, lacinia mobilis of left mandible with 5 cusps; incisor of right mandible with accessory and 3 fringed spines; incisor of left mandible mandible with 2 longer fringed spines and two minute spines; molar of both mandibles truncate, distal surface with many small tubercles. 2-segmented palp of maxilla 1 with about 5 short, distal spines and 4 simple setae; lobe with about 8 spines. Maxilla 2, outer lobe with 8, inner lobe with 6 distal setae. Distal margin of maxillipedal endite almost straight, with 4 simple setae; palp 5-segmented; inner lobe of proximal segment very large, somewhat extending beyond distal margin of third segment; medial margin of lobe with row of setules increasing in length distally; grasping margin of strongly curved distal segment with row of stiff setules. Lateral lobes of labium with large, broadly rounded and somewhat posteriorly directed projection. Propodus of gnathopod 1 triangular, palm almost straight with numerous denticles in proximal two thirds and a strong proximal compound spine; dactylus more strongly curved in distal third, grasping margin with row of about 12 short spines and many setules. Propodus of gnathopod 2 greatly enlarged; palm with proximal compound spine on heel, the latter being variable in size; distal half of propodal palm with a deep proximal and a shallow distal excavation; dactylus well curved, not extending beyond proximal heel of propodal palm; propodus, carpus and merus with several bifid setae. Gills on pereonites 3 and 4 oval. Pereopods 3 and 4 unisegmented with 4-5 setae near apex. Pereopod 5 inserted posteriorly on pereonite, smaller than pereopods 6-7; propodus of pereopods 5-7 almost straight, palm with several spines in arrangement as figured.

Abdomen with pair of lateral, setose unisegmented lobes.

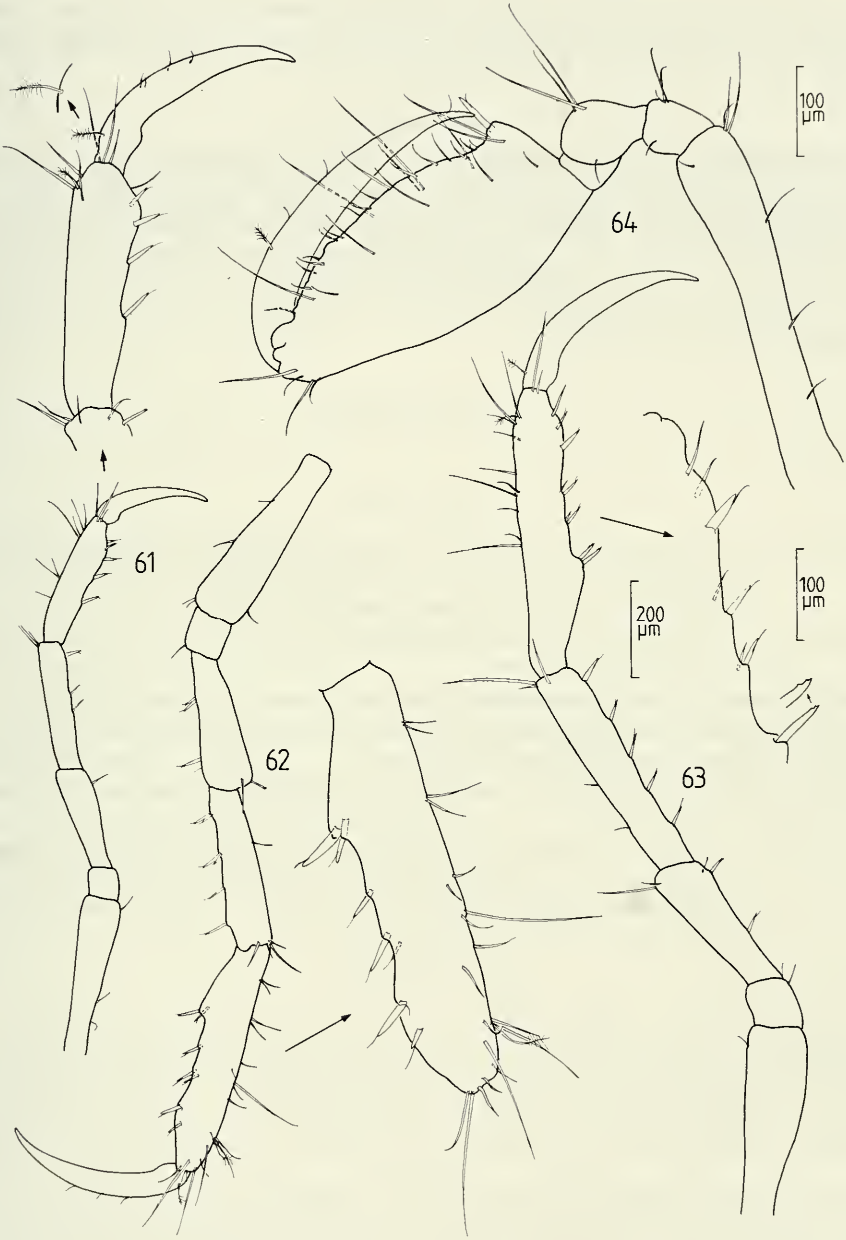
♀: Similar in general habitus to ♂ with pereonites 3-5 much more compact. Second gnathopod much smaller than in ♂, propodal palm with shallow proximal heel bearing strong compound spine; grasping margin of palm with several setae of different lengths. Oostegites roughly circular or triangular with broadly rounded corners. Margin of first oostegite with about 38, of second oostegite with 9 simple setae.

Remarks: *M. sandalensis* is very common in shallow waters of the tropical Indo-Pacific Ocean. Although very often found (see McCain & Steinberg 1970: 55) it has never been described in detail. It seems to be a highly variable species with regard to the arrangement of the number and arrangement of acute projections on head and pereonites 2-3 as well as to the shape of the ♂ propodal palm (Mayer 1903: 40). It has been the largest species of Caprellidae found in reef locations of the Society Islands, from where



FIGS 54-60.

Metaprotella sandalensis Mayer, 1898, ♂: 54) dactylus and propodus of gnathopod 2, other ♂; 55) gnathopod 1; 56) gill and pereopod 3; 57) abdomen, ventral view. ♀: 58) lateral view; 59) oostegite 1; 60) oostegite 2.



FIGS 61-64.

Metaprotella sandalensis Mayer, 1898, ♂: 61) pereopod 5; 62) pereopod 6; 63) pereopod 7; 64) gnathopod 2.

it is reported for the first time. It seems that *M. sandalensis* prefers moderately exposed locations because none of the specimens available is from the strongly exposed sampling stations on the crest of the barrier reefs at Moorea.

ZUSAMMENFASSUNG

Eine Aufsammlung von Korallenriff-bewohnenden Caprelliden (Amphipoda) auf Bora Bora und Moorea, Gesellschaftsinseln, erbrachte neben zwei im Indo-Pazifik weit verbreiteten Formen (*Hemiaegina minuta* Mayer, 1890 und *Metaprotella sandalensis* Mayer, 1898) auch zwei für die Wissenschaft neue Arten (*Caprellina bispinosa* n. sp., *Fallotritella polynesica* n. sp.). Sämtliche Arten fanden sich ausschließlich in mäßig bis stark exponierten Riffabschnitten, wobei *M. sandalensis* vermutlich die mäßig exponierten Bereiche bevorzugt.

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